

CLAIMS

1. A device for communication between a digital
adapter (5) linked to an exchange (3) by means of a
5 digital interface (7), particularly of ISDN type, and
an analog adapter (6) linked to an exchange (4) by
means of an analog interface (8), said exchanges (3,4)
being linked by means of a telecommunications network
(2), wherein said device includes means (11,12;15,16)
10 for direct linking between the digital adapter (5) and
the analog adapter (6), the digital information from
the digital adapter (5) being sent to the analog
adapter (6), and vice versa, in the digital form
without emulating an analog signal.

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2. A device according to claim 1, wherein said
direct link means (11,12;15,16) include, in the
direction of transmission going from the digital
adapter (5) to the analog adapter (6), a digital
20 transmitter (11) situated in the digital adapter (5)
and able to transmit, to an analog receiver (15)
situated in the analog adapter (6), analog pulses the
voltage levels of which represent the information
transmitted from the digital adapter (5) to the analog
25 adapter (6).

3. A device according to claim 1, wherein said
direct link means (11,12;15,16) include, in the
direction of transmission going from the analog adapter
30 (6) to the digital adapter (5), an analog transmitter
(16) situated in the analog adapter (6) and able to
transmit, to a digital receiver (12) situated in the
digital adapter (5), an analog signal such that, when
it is sampled by the analog interface of the exchange
35 (4), it will equate the sum of a value able to be
determined by the digital information item transmitted
by the analog adapter (6) to the digital adapter (5),

4. A device according to claim 1 or claim 2, wherein the receiver of the analog adapter (6) includes an adaptive linear equalizer (17) connected at its input to the output of an analog/digital converter (19), and connected at its output to the input of an output equalizer (20) linked to the user's equipment, so that the response at the output of the adaptive linear equalizer (17) is a partial response, in particular a class IV response.

6. A device according to claim 4 or claim 5,
wherein said output equalizer (20) is a decision
20 feedback equalizer or a Viterbi equalizer.

30 8. A device according to claim 3, wherein said
transmitter (16) of the analog adapter (6) includes a
line coder (27) followed by a predistortion filter (24)
which synthesizes a partial response, in particular a
35 class IV response.

9. A device according to claim 8, wherein said partial response is determined adaptively.

10. A device according to claim 1 or claim 3,
5 wherein the digital adapter (5) includes a decoder (30) connected, at its input, to an echo filter (22) and to the output of the digital interface of the digital adapter (5), said decoder (30) delivering at its output to the user's equipment (9) the most likely sequence of
10 groups of bits transmitted by the analog adapter (6), given the echo of the signal produced by the digital adapter (5).

11. Method of transmission from a digital adapter
15 (5) to an analog adapter (6) in a digital communication network, said method including the steps of:

- taking a group of bits originating from a source (5) of digital data, for example a group of 6 bits;
- 20 - choosing one from among n ($n = 64$) levels preselected from among N ($N = 256$, in particular) voltage levels, each level being represented in digital form by one byte;
- successively sending the bytes corresponding to
25 the selection of one from among n levels through the digital network to an analog adapter (6), so as, in the analog adapter, to produce signals the amplitude of which is substantially equal to the levels represented by each byte, the signals corresponding to successive
30 bytes interfering with one another so as to produce a resultant analog signal in the analog adapter;
- equalizing said resultant analog signal so as to eliminate the interference;
- measuring the amplitude of said resultant
35 analog signal and deducing the digital value of the byte therefrom;

5 12. Method of transmission from an analog adapter
 (6) to a digital adapter (5) in a communications
 system, said method including the steps of:

10 - selecting an analog signal having an amplitude
corresponding to the digital value of said group of
bitsthe signals corresponding to successive groups
interfering with one another and having a shape such
that, at the moment when said analog signal is sampled
15 in the analog interface of the exchange, its value is
substantially equal to the sum of a value to be
determined by the digital information item transmitted
by the analog adapter (6) to the digital adapter (5),
and of the echo of the signal transmitted by the
20 digital adapter (5), without said value having to be
equal to a level of the quantization law, so that
following the sampling of the analog signal, a byte
appears in the digital adapter (5), representing the
said sum;

- transmitting the digital value of the groups of 30 bits retrieved to the equipment of the user.